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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/029,261

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Jae Woo Lyu

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EXAMINER

PHAN, HANH

ART UNIT

PAPER NUMBER

2638

DATE MAILED: 01/25/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/029,261

Applicant(s)

LYU, JAE WOO

Examiner

Hanh Phan

Art Unit

2638

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 28 December 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-13 and 15-30 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 17-25 is/are allowed.
- 6) ☒ Claim(s) 1-3, 7-13, 15, 16, 26, 27 and 29 is/are rejected.
- 7) ☒ Claim(s) 4-6, 28 and 30 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

### **DETAILED ACTION**

1. This Office Action is responsive to the Amendment filed 10/26/2005.

#### ***Claim Objections***

2. Claim 23 is objected to because of the following informalities:

-In claim 23, line 5, the phrase "a first baseband" should be changed to – a second baseband--.

-In claim 23, line 6, the phrase "delay the first baseband" should be changed to – delay the second baseband --.

- In claim 23, line 7, the phrase "a second baseband digital electrical signal, sum the delayed first baseband" should be changed to -- a first baseband digital electrical signal, sum the delayed second baseband --.

-In claim 23, line 8, the phrase "the second baseband digital signal" should be changed to – the first baseband digital signal --.

Appropriate correction is required.

#### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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4. Claims 1-3, 7-11, 15, 16, 26, 27 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Imajo (US Patent No. 6,337,754) in view of Arnon et al (Pub. No.: US 2002/0114038).

Regarding claims 1, 10, 26 and 29, referring to Figure 1, Imajo teaches an optical repeater system, comprising:

a plurality of optical repeaters (i.e., fixed relay stations 2-1A, 2-1B,..., Fig. 1) coupled in series, each configured to receive and convert a radio frequency (RF) analog signal to a first baseband electrical signal (i.e., each fixed relay station having an antenna 35A configured to receive and convert a radio frequency (RF) analog signal to a first baseband electrical signal, Fig. 1), sum (i.e., power multiplexer 33, Fig. 1) the first baseband electrical signal and a second baseband electrical signal transmitted from a previous optical repeater (i.e., fixed relay station 2-1B) in the series to generate an optical output signal (col. 12, lines 15-32, col. 13, lines 45-67 and col. 14, lines 1-6); and a base station (i.e., fixed central station 1-2, Fig. 1) configured to receive and demodulate the optical output signal of a last one of the plurality of optical repeaters in the series (see from col. 11, line 2 to col. 17, line 28).

Imajo differs from claims 1, 10, 26 and 29 in that he fails to specifically teach the optical repeater including converting an analog baseband signal into a digital baseband signal. However, Arnon teaches an optical repeater including converting an analog baseband signal into a digital baseband signal (Fig. 7, pages 12 and 13, paragraphs [0259]-[0262]). Therefore, it would have been obvious to one having skill in the art at the time the invention was made to incorporate the optical repeater including converting an

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analog baseband signal into a digital baseband signal as taught by Arnon in the system of Imajo. One of ordinary skill in the art would have been motivated to do this since Arnon suggests in pages 12 and 13, paragraphs [0259]-[0262] that using such the optical repeater including converting an analog baseband signal into a digital baseband signal has advantage of allowing converting an analog signal into a digital signal.

Regarding claims 2, 11 and 15, the combination of Imajo and Arnon teaches the second baseband digital electrical signal transmitted from a previous optical repeater in the series is a previously summed signal (Fig. 1 of Imajo and Fig. 7 of Arnon).

Regarding claim 3, Imajo further teaches the series connection comprises a daisy chain connection (Fig. 1).

Regarding claims 7 and 27, Imajo further teaches each of the plurality of optical repeaters is coupled with at least one other of the plurality of optical repeaters by an optical link (Fig. 1).

Regarding claim 8, Imajo further teaches the optical link comprises an optical cable (Fig. 1).

Regarding claims 9 and 16, Imajo further teaches the last optical repeater is coupled with the base station by an optical cable (Fig. 1).

5. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Imajo (US Patent No. 6,337,754) in view of Arnon et al (Pub. No.: US 2002/0114038) and further in view of Ohta et al (US Patent No. 6,122,083).

Regarding claim 12, Imajo as modified by Arnon teaches all the aspects of claimed invention except fails to teach an automatic gain control circuit. However, Ohta

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in US Patent No. 6,122,083 teaches an optical repeater comprising an automatic gain control circuit (see Figures 15-18, col. 17, lines 56-67 and col. 18, lines 1-64).

Therefore, it would have been obvious to one having skill in the art at the time the invention was made to incorporate the automatic gain control circuit as taught by Ohta in the system of Imajo modified by Arnon. One of ordinary skill in the art would have been motivated to do this since Ohta suggests in column 17, lines 56-67 and col. 18, lines 1-64 that using such the automatic gain control circuit has advantage of allowing maintaining the power level of signal constant.

6. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Imajo (US Patent No. 6,337,754) in view of Arnon et al (Pub. No.: US 2002/0114038) and further in view of Bassirat (US Patent No. 6,507,741).

Regarding claim 13, Imajo as modified by Arnon teaches all the aspects of claimed invention except fails to teach a digital delay device to delay the base band signal. However, Bassirat in US Patent No. 6,507,741 teaches a delay device to delay the base band signal (Figs. 4b, 4c, 4d, 5a and 5b, col. 8, lines 29-41). Therefore, it would have been obvious to one having skill in the art at the time the invention was made to incorporate the delay device to delay the base band signal as taught by the Bassirat in the system of Imajo modified by Arnon. One of ordinary skill in the art would have been motivated to do this since Bassirat suggests in column 8, lines 29-41 that using such the delay device to delay the base band signal has advantage of allowing the base determining the location of the subscriber station.

***Allowable Subject Matter***

7. Claims 4-6, 28 and 30 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

8. Claims 17-25 are allowed.

***Response to Arguments***


9. Applicant's arguments with respect to claims 1-13 and 15-30 have been considered but are moot in view of the new ground(s) of rejection.

***Conclusion***

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hanh Phan whose telephone number is (571)272-3035.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kenneth Vanderpuye, can be reached on (571)272-3078. The fax phone number for the organization where this application or proceeding is assigned is (571)273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)305-4700.

  
**HANH PHAN**  
**PRIMARY EXAMINER**